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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/087,691	03/01/2002	Kai Kwong Lau	V200-0697	4888
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VISTEON				FLANDERS, ANDREW C
C/O BRINKS HOFER GILSON & LIONE				ART UNIT
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CHICAGO, IL 60610				2644

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Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/087,691	LAU, KAI KWONG	
	Examiner Andrew C. Flanders	Art Unit 2644	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) Responsive to communication(s) filed on 01 March 2002.
- 2a) This action is FINAL. 2b) This action is non-final.
- 3) Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) Claim(s) 1-11 and 15-20 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) Claim(s) 2-4, 6 and 7 is/are allowed.
- 6) Claim(s) 1, 8-11 and 15-20 is/are rejected.
- 7) Claim(s) 5 is/are objected to.
- 8) Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) The specification is objected to by the Examiner.
- 10) The drawing(s) filed on 02 March 2002 is/are: a) accepted or b) objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) All b) Some * c) None of:
1. Certified copies of the priority documents have been received.
 2. Certified copies of the priority documents have been received in Application No. _____.
 3. Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) Notice of References Cited (PTO-892)
- 2) Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____.
- 4) Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.
- 5) Notice of Informal Patent Application (PTO-152)
- 6) Other: _____.

DETAILED ACTION

Claim Objections

Claim 5 objected to because of the following informalities: Claim 5 recites the limitation "second filter structure" which should apparently read "second equalization structure". Appropriate correction is required.

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claim 20 rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 20 recites the limitation "desired frequency". There is insufficient antecedent basis for this limitation in the claim. It appears to the examiner as though the term should read "desired frequency response". For the purpose of expediting prosecution, the term will be understood as such.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1, 8 – 11, 15 – 16 and 20 are rejected under 35 U.S.C. 102(b) as being anticipated by Milne (U.S. Patent 5,983,087).

Regarding **Claim 1**, Milne discloses:

A method of maximizing a usage of memory wherein said memory includes a non volatile memory and a volatile memory in communication with a digital signal processor (DSP) (i.e. the remote DSP modules include non volatile memory and random access memory; col. 1 lines 56 – 57), comprising the steps of:

transferring a jump and lookup table from said nonvolatile memory to said volatile memory, said jump and lookup table providing a sequence of addresses to execute an equalization structure of said DSP (i.e. the remote DSP is configured by software stored in the flash memory and then transferred to RAM during system operation, the software provides up to 5 equalization features per speaker; col. 3 lines 35 – 39);

transferring a plurality of filter coefficients from said nonvolatile memory to said volatile memory, said plurality of filter coefficients provide filter characteristics for said equalization structures (i.e. a set of many coefficients are stored in each DSP module; col. 3 lines 45 – 51; all of the coefficient data is flashed into non-volatile memory; col. 4 lines 48 – 49; and the software stored in flash memory is transferred to RAM during system operation; col. 3 lines 35 – 39);

applying a set of filter coefficients to said equalization structure (i.e. transfer functions are programmed into the remote modules; col. 5 line 35);

Art Unit: 2644

filtering said input signal utilizing said equalization structure and producing an intermediate result wherein said intermediate result is stored for additional filtering (i.e. the audio data is processed according to the stored transfer functions and then converted to an analog signal; col. 2 lines 9 – 11. The conversion of a digital signal requires an inherent holding/storing of the digital value and then a smoothing filter to filter the output); and

outputting said intermediate result as an equalized output signal when said sequence of addresses in said jump and lookup table indicates filtering is complete (i.e. the audio data is processed and then output to the speakers when the processing is complete; col. 2 lines 9 – 11).

Regarding **Claim 8**, Milne discloses:

A data system for equalizing a data signal to produce a desired frequency response (title and abstract), comprising:

a digital signal processor (DSP) equalization structure having settable coefficients and invokable on demand for filtering a data signal to produce a filtered signal (each remote DSP module can have an acoustic customization including setting coefficients for the equalization filters; col. 4 lines 27 – 34)

data storage storing said filtered signal as an intermediate result during processing of said data signal (i.e. the audio data is processed according to the stored transfer functions and then converted to an analog signal; col. 2 lines 9 – 11. The

conversion of a digital signal requires an inherent holding/storing of the digital value and then a smoothing filter to filter the output);

a coefficient table containing a plurality of coefficient sets, each set being adapted to be transferred to said filter structure as said settable coefficients to provide a filter characteristic for said DSP equalization structure (i.e. a set of many coefficients are stored in each DSP module for accommodating transfer functions; col. 3 lines 47 - 51);

a jump and lookup table containing addresses to execute said DSP equalization structure to produce said desired frequency response by sequentially using said intermediate result as said input signal (i.e. the remote DSP is configured by software stored in the flash memory and then transferred to RAM during system operation, the software provides up to 5 equalization features per speaker; col. 3 lines 35 – 39);

a nonvolatile memory (i.e. a flash memory; col. 3 lines 35 – 37);

a volatile memory (i.e. a random access memory; col. 3 lines 35 – 37);;

transferring said coefficients sets and said jump and lookup table from said nonvolatile memory to said volatile memory (i.e. the remote DSP is configured by software stored in the flash memory and transferred to RAM during system operation).

Regarding **Claim 9**, in addition to the elements stated above regarding claim 9, Milne further discloses:

wherein said input signal is an audio signal (i.e. audio data from the CD changer is transmitted to the radio; col. 2 lines 30 – 35).

Regarding **Claim 10**, in addition to the elements stated above regarding claim 8, Milne further discloses:

wherein said nonvolatile memory is an EEPROM (i.e. a flash memory; col. 3 lines 35 – 37).

Regarding **Claim 11**, in addition to the elements stated above regarding claim 8, Milne further discloses:

wherein said volatile memory is RAM (i.e. random access memory; col. 3 lines 35 – 37).

Regarding **Claim 15**, in addition to the elements stated above regarding claim 8, Milne further discloses:

wherein said DSP equalization structure comprises a plurality of equalization structures (i.e. multiple remote DSP modules; col. 4 lines 27 – 30).

Regarding **Claim 16**, in addition to the elements stated above regarding claim 8, Milne further discloses:

wherein said DSP equalization structure comprises only one equalization structure used repeatedly (i.e. all remote DSP modules are physically and electrically identical at the time of manufacture; col. 4 lines 5 – 8).

Regarding **Claim 20**, in addition to the elements stated above regarding claim 8, Milne further discloses

wherein said desired frequency is achieved by equalizing a plurality of frequency bands for at least one channel to compensate for acoustical characteristics of the interior of a vehicle (col. 1 lines 1 – 40).

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 17 - 19 is rejected under 35 U.S.C. 103(a) as being unpatentable over Milne (U.S. Patent 5,983,087).

Regarding **Claim 17**, in addition to the elements stated above regarding claim 17, Milne doesn't explicitly disclose a RAM to hold the data values for the D/A conversion. However, it would have been obvious to one of ordinary skill in the art at the time of the invention to use RAM to hold the values. One would have been motivated to do so due to the ease of use, cost, and availability of RAM in a processing environment.

Regarding **Claim 18**, in addition to the elements stated above regarding claim 17, Milne doesn't explicitly disclose a register to hold the data values for the D/A conversion. However, it would have been obvious to one of ordinary skill in the art at the time of the invention to use a register to hold the values. One would have been motivated to do so in order to efficiently hold the values needed for D/A conversion.

Regarding **Claim 18**, in addition to the elements stated above regarding claim 17, Milne doesn't explicitly disclose an accumulator to hold the data values for the D/A conversion. However, it would have been obvious to one of ordinary skill in the art at the time of the invention to use an accumulator to hold the values. One would have been motivated to do so in order to efficiently hold the values needed for D/A conversion.

Allowable Subject Matter

Claims 2 – 4, 6 and 7 are allowed.

The following is an examiner's statement of reasons for allowance:

The following is a statement of reasons for the indication of allowable subject matter:

Claim 2 recites the limitations of retrieving one of said addresses by use of a first pointer to execute a first equalization structure;

retrieving a corresponding set of filter coefficients by use of a second pointer to provide a first equalization structure;

producing an intermediate result in response to filtering said input signal;

incrementing said first pointer to next said addresses of said jump and lookup table to execute a subsequent equalization structure;

incrementing said second pointer to next said corresponding set of filter coefficients to provide a subsequent equalization structure;

transferring said intermediate signal to said subsequent equalization structure for additional filtering; and

incrementing said first pointer and said second pointer to provide next said subsequent equalization structure for additional filtering.

The closest prior art of record Milne does not anticipate these limitations nor would it have been obvious to one of ordinary skill in the art at the time of the invention to do so.

Conclusion

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Kitamura (U.S. Patent 6,704,421), Jang (U.S. Patent 5,195,141), Ford (U.S. Patent Application Publication 2002/0159607) and Prakash (U.S. Patent 6,405,227).

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Andrew C. Flanders whose telephone number is (571) 272-7516. The examiner can normally be reached on M-F 8:30 - 5:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Vivian Chin can be reached on (571) 272-7848. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

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